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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,919	02/03/2004	Chad A. Cobbley	MICS:0078-5	1688

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EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/770,919	Applicant(s) COBBLEY ET AL.	
	Examiner James M. Mitchell	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 3,4 and 16-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office is in response to applicant's amendment filed May 214, 2006.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2 and 5-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The definition of a substrate is a supporting material on or **in which** the components of an integrated circuit are **fabricated or attached**, or an insulating layer that components are formed on; therefore, since the dies contain circuits formed in semiconductor substrates the stack includes a substrate. Alternatively, the die stacks are formed on/ attached to a holder albeit temporarily, and therefore the holder is still within the definition of a substrate. As such, the claim is not enabled, since one skilled in the art to which it pertains, or with which it is most nearly connected, cannot make a stack formed on *what it excludes*.

Claims 1, 2 and 5-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed,

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had possession of the claimed invention. There is no support in the specification for the negative limitation that the die stacks do not include a lead frame.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1, 2 and 5-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "configured," while applicant's specification makes mention of the configuration of chips (e.g. different sizes etc.) it is completely silent as to how the "holder is **configured**..." except to say, "[t]he holding surface is considered temporary in that the wafer itself may be used to temporarily hold, transfer, test or store one or more die stacks **for example**." There is nothing in the specification that would apprise one of the metes and bounds of how the substrate was configured¹ or the structural limitations imparted.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

¹ Note, a substrate/PCB that a chip is soldered may be considered temporary in that the chip may be removed (e.g. defect in chip)

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Claims 1, 5-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (JP 57015455) in combination with Ang (U.S. 6,599,764).

Sakurai² (Fig. 1, 2) discloses:

(cl. 1) a plurality of semiconductor die stacks thereon (1a-c), wherein each of the plurality of semiconductor die stacks include at least two semiconductor die coupled together by an adhesive (6) and wherein the plurality of semiconductor die stacks do not include a lead frame (e.g. none shown) or an interposing substrate;

(cl. 6) bottom two dies have an extent from left surface to its opposite right surface and therefore thickness larger than top die³;

(cl. 7) where the topside of at least one die is less than topside of a second die (Fig. 2);

(cl. 5, 11) at least three dies connected by adhesives (Fig. 2)

Sakurai fails to explicitly disclose a temporary holder or that at least on die is memory.

Ang utilizes a temporary holder (100) for dies and at least on die being memory (e.g. Col. 4, Line 10).

It would have been obvious to one of ordinary skill in the art to incorporate use of a temporary holder and memory die as taught by Ang with the die stack of Sukurai in order to provide a die and testing means as taught by Ang (Title) and as required by Sakurai (Abstract).

² Note, alternatively Vindasius (U.S. 5,891,761) requiring that its die-stack be tested in combination with any test board, such as Hiruta et al (U.S 6,094,057) providing a testing means could have been used to evidence the obviousness of the claimed invention.

³ E.g. same as shown by applicant's Figure 5b.

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With respect to the shingle stack (understood to mean offset) of claim 8, applicant has not disclosed that the offset of dies modifies the operation. As such, the rearrangement would have been obvious to one of ordinary skill in the art, since it has been held that the shifting of positions of parts is unpatentable where the operation is not modified. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice).

Claims 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bjork (U.S. 6,474,475) in combination with Sakurai (JP 57015455).

Bjork (Fig. 1, 3) discloses:

(cl. 1) a holder (12) having a plurality of semiconductor die stacks thereon (40), configured (see footnote 1) to temporarily hold (e.g. carrier) the plurality of die stack wherein each of the plurality of semiconductor die stacks include at least two semiconductor die coupled together (e.g. both "affixed" to layer, 60) and wherein the plurality of semiconductor die stacks do not include a lead frame (e.g. leads detached from frame) or permanent substrate.

Bjork does not appear to explicitly disclose use of an adhesive.

However, Sakurai utilizes an adhesive (6).

It would have been obvious to one of ordinary skill in the art to incorporate use of an adhesive with the dies in order to affix or secure them as taught to an adjacent material as taught by Sakurai (Eng. Abstract).

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jmm, J.D.
October 15, 2006




CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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